DOMINION TRANSMISSION, INC.
BRIDGEPORT GENERAL OFFICE BUILDING

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Application for General Permit Registration to Construct, Modify, Relocate or Administratively Update a Stationary Source of Air Pollutants

ATTACHMENTS

**Note – There are no Attachments C, E, H, J, K, M, N, and O for this permit application

WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475 • *www.dep.wv.gov/daq*

APPLICATION FOR GENERAL PERMIT REGISTRATION

CONSTRUCT, MODIFY, RELOCATE OR ADMINISTRATIVELY UPDATE

A STATIONARY SOURCE OF AIR POLLUTANTS

☐ CONSTRUCTION X MODIFICATION ☐ RELOCATION ☐ CLASS I ADMINISTRATIVE UPDATE
☐ CLASS II ADMINISTRATIVE UPDATE

CHECK WHICH TYPE OF GENERAL PERMIT REGISTRATION YOU ARE APPLYING FOR:

☐ **G10-D –** Coal Preparation and Handling	☐ **G40-C –** Nonmetallic Minerals Processing
☐ **G20-B –** Hot Mix Asphalt	☐ **G50-B –** Concrete Batch
☐ **G30-D –** Natural Gas Compressor Stations	☐ **G60-C** - Class II Emergency Generator
☐ **G33-A –** Spark Ignition Internal Combustion Engines	X **G65-C –** Class I Emergency Generator
☐ **G35-A –** Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit)	☐ **G70-A –** Class II Oil and Natural Gas Production Facility

SECTION I. GENERAL INFORMATION

1. Name of applicant (as registered with the WV Secretary of State's Office):
Dominion Transmission, Inc.

2. Federal Employer ID No. **(FEIN):**
550629203

3. Applicant's mailing address:

925 White Oaks Blvd.
Bridgeport, WV 26330

4. Applicant's physical address:

925 White Oaks Blvd.
Bridgeport, WV 26330

5. If applicant is a subsidiary corporation, please provide the name of parent corporation: ***N/A***

6. **WV BUSINESS REGISTRATION.** Is the applicant a resident of the State of West Virginia? X **YES** ☐ **NO**

- IF **YES,** provide a copy of the Certificate of **Incorporation/ Organization / Limited Partnership** (one page) including any name change amendments or other Business Registration Certificate as **Attachment A**.
- IF **NO,** provide a copy of the **Certificate of Authority / Authority of LLC / Registration** (one page) including any name change amendments or other Business Certificate as **Attachment A**.

SECTION II. FACILITY INFORMATION

7. Type of plant or facility (stationary source) to be constructed, modified, relocated or administratively updated (e.g., coal preparation plant, primary crusher, etc.):

Installation of a natural gas emergency generator

8a. Standard Industrial Classification (SIC) Code: 8741

8b. North American Industry Classification System (NAICS) Code: 551114

9. DAQ Plant ID No. (for existing facilities only):

N/A

10. List all current 45CSR13 and other General Permit numbers associated with this process (for existing facilities only):

N/A

A: PRIMARY OPERATING SITE INFORMATION

11A. Facility name of primary operating site:	12A. Address of primary operating site:
Bridgeport General Office Building	Mailing and Physical: ***925 White Oaks Blvd.*** ***Bridgeport, WV 26330***

13A. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? X **YES** ☐ **NO**

– IF **YES**, please explain: ***The applicant was leasing the proposed unit, but now owns it.***

– IF **NO**, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

14A. – For **Modifications or Administrative Updates** at an existing facility, please provide directions to the present location of the facility from the nearest state road;

– For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a **MAP** as **Attachment F**.

I-79 to Exit 124 which is Jerry Dove Drive, WV-279. Turn West on WV-279 Jerry Dove Drive towards the hospital. Go approximately 0.5 miles and turn right onto White Oaks Blvd. Continue approximately 0.5 miles to the end of White Oaks Blvd. Dominion is the last building on the left.

15A. Nearest city or town:	16A. County:	17A. UTM Coordinates:
Bridgeport	***Harrison***	Northing (KM): ***4354419.80*** Easting (KM): ***566267.23*** Zone: ***17***

18A. Briefly describe the proposed new operation or change (s) to the facility:	19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
Dominion Transmission, Inc. is proposing to install a 1,098 hp (750 kW) natural gas emergency generator.	Latitude: 39 20' 12.00" N Longitude: 80 13' 51.83" W

B: 1ST ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits)

11B. Name of 1st alternate operating site:	12B. Address of 1st alternate operating site:
N/A	Mailing: ***N/A*** Physical: ***N/A***

13B. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? ***N/A***

– IF **YES**, please explain:

– IF **NO**, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

14B. – For **Modifications or Administrative Updates** at an existing facility, please provide directions to the present location of the facility from the nearest state road;

– For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a **MAP** as **Attachment F**.

N/A

15B. Nearest city or town:	16B. County:	17B. UTM Coordinates:
N/A	***N/A***	Northing (KM): ***N/A*** Easting (KM): ***N/A*** Zone: ***N/A***

18B. Briefly describe the proposed new operation or change (s) to the facility:	19B. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
N/A	Latitude: ***N/A*** Longitude: ***N/A***

C: 2ND ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits):

11C. Name of 2nd alternate operating site:	12C. Address of 2nd alternate operating site:
N/A	Mailing: ***N/A*** Physical: ***N/A***

13C**.** Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? ***N/A***

- IF **YES**, please explain: ***N/A***
- IF **NO**, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

14C. – For **Modifications or Administrative Updates** at an existing facility, please provide directions to the present location of the facility from the nearest state road;

– For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a **MAP** as **Attachment F**.

N/A

15C. Nearest city or town:	16C. County:	17C. UTM Coordinates:
N/A	***N/A***	Northing (KM): ***N/A*** Easting (KM): ***N/A*** Zone: ***N/A***

18C. Briefly describe the proposed new operation or change (s) to the facility:	19C. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
N/A	Latitude: ***N/A*** Longitude: ***N/A***

20. Provide the date of anticipated installation or change:	21. Date of anticipated Start-up if registration is granted:
4/30/15	***7/2015***
☐ If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: :	

22. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application if other than 8760 hours/year. (Note: anything other than 24/7/52 may result in a restriction to the facility's operation).

Hours per day ***24*** Days per week ***7*** Weeks per year ***3*** Percentage of operation ***5.7% (500 hrs/8760 hrs)***

SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS

23. Include a check payable to WVDEP – Division of Air Quality with the appropriate **application fee** (per 45CSR22 and 45CSR13).

24. Include a **Table of Contents** as the first page of your application package.

All of the required forms and additional information can be found under the Permitting Section (General Permits) of DAQ's website, or requested by phone.

25. Please check all attachments included with this permit application. Please refer to the appropriate reference document for an explanation of the attachments listed below.

- [X] ATTACHMENT A : CURRENT BUSINESS CERTIFICATE
- [X] ATTACHMENT B: PROCESS DESCRIPTION
- [ ] ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS
- [X] ATTACHMENT D: PROCESS FLOW DIAGRAM
- [ ] ATTACHMENT E: PLOT PLAN
- [X] ATTACHMENT F: AREA MAP
- [X] ATTACHMENT G: EQUIPMENT DATA SHEETS AND REGISTRATION SECTION APPLICABILITY FORM
- [ ] ATTACHMENT H: AIR POLLUTION CONTROL DEVICE SHEETS
- [X] ATTACHMENT I: EMISSIONS CALCULATIONS
- [ ] ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT
- [ ] ATTACHMENT K: ELECTRONIC SUBMITTAL
- [X] ATTACHMENT L: GENERAL PERMIT REGISTRATION APPLICATION FEE
- [ ] ATTACHMENT M: SITING CRITERIA WAIVER
- [ ] ATTACHMENT N: MATERIAL SAFETY DATA SHEETS (MSDS)
- [ ] ATTACHMENT O: EMISSIONS SUMMARY SHEETS
- [ ] OTHER SUPPORTING DOCUMENTATION NOT DESCRIBED ABOVE (Equipment Drawings, Aggregation Discussion, etc.)

Please mail an original and two copies of the complete General Permit Registration Application with the signature(s) to the DAQ Permitting Section, at the address shown on the front page of this application. Please DO NOT fax permit applications. For questions regarding applications or West Virginia Air Pollution Rules and Regulations, please refer to the website shown on the front page of the application or call the phone number also provided on the front page of the application.

SECTION IV. CERTIFICATION OF INFORMATION

This General Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of a Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, Emission Inventory, Certified Emission Statement, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. Any administratively incomplete or improperly signed or unsigned Registration Application will be returned to the applicant.

FOR A CORPORATION (domestic or foreign)

X I certify that I am a President, Vice President, Secretary, Treasurer or in charge of a principal business function of the corporation

FOR A PARTNERSHIP

O I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

O I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

O I certify that I am the President or a member of the Board of Directors

FOR A JOINT VENTURE

O I certify that I am the President, General Partner or General Manager

FOR A SOLE PROPRIETORSHIP

O I certify that I am the Owner and Proprietor

I hereby certify that (please print or type) ***Brian Sheppard*** *is an Authorized Representative and in that capacity shall represent the interest of the business (e.g., Corporation, Partnership, Limited Liability Company, Association Joint Venture or Sole Proprietorship) and may obligate and legally bind the business. If the business changes its Authorized Representative, a Responsible Official shall notify the Director of the Office of Air Quality immediately, and/or,*

I hereby certify that all information contained in this General Permit Registration Application and any supporting documents appended hereto is, to the best of my knowledge, true, accurate and complete, and that all reasonable efforts have been made to provide the most comprehensive information possible

Signature _____ 03/11/2015
(please use blue ink) Responsible Official Date

Name & Title Brian Sheppard, Vice President, Pipeline Operations
(please print or type)

Signature _____
(please use blue ink) Authorized Representative (if applicable) Date

Applicant's Name Dominion Transmission, Inc.

Phone & Fax 304-627-3733 304-627-3323
Phone Fax

Email Brian.C.Sheppard@dom.com

Attachment A

Current Business Certificate

WEST VIRGINIA
STATE TAX DEPARTMENT

BUSINESS REGISTRATION CERTIFICATE

ISSUED TO:
DOMINION TRANSMISSION INC
445 W MAIN ST
CLARKSBURG, WV 26301-2843

BUSINESS REGISTRATION ACCOUNT NUMBER: **1038-3470**

This certificate is issued on: 06/8/2011

This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with Chapter 11, Article 12, of the West Virginia Code

The person or organization identified on this certificate is registered to conduct business in the State of West Virginia at the location above.

This certificate is not transferrable and must be displayed at the location for which issued.

This certificate shall be permanent until cessation of the business for which the certificate of registration was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of this certificate displayed at every job site within West Virginia.

atL006 v.4
L0228957312

Attachment B

Process Description

PROCESS DESCRIPTION

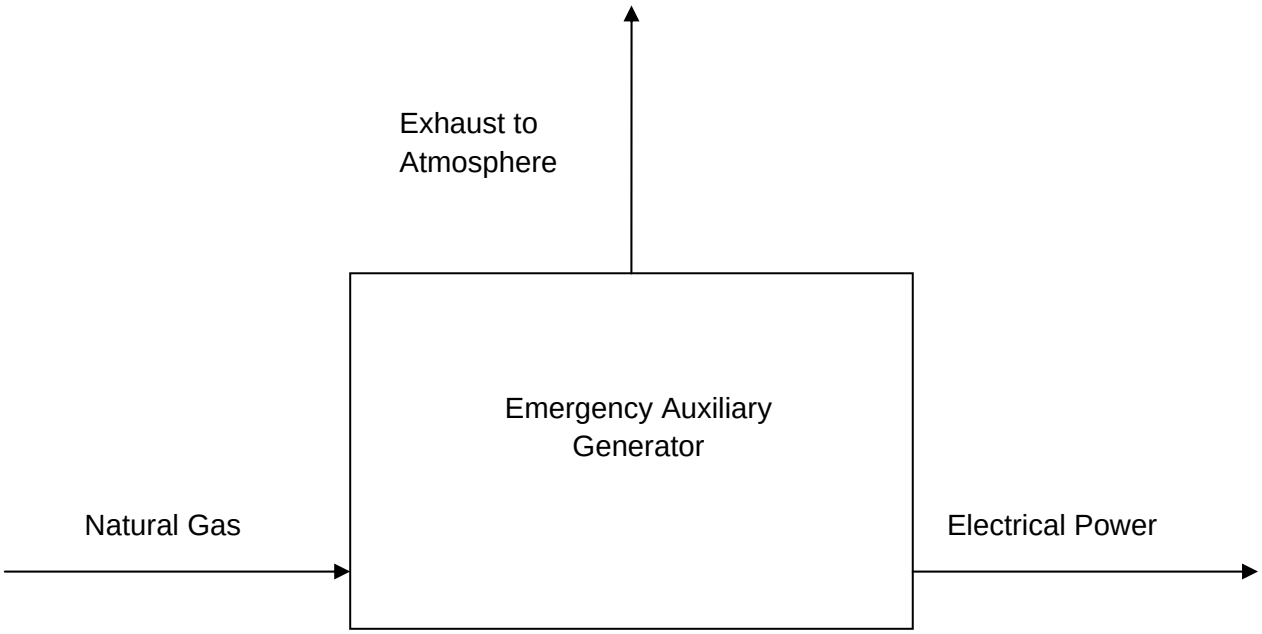
Bridgeport General Office Building is an office building for Dominion Transmission, Inc. It is an office complex of ~220 personnel including Gas Control and associated infrastructure. This general permit application is for a new natural gas emergency generator to supply power to the facility in the event of a complete power loss.

Attachment D

Process Flow Diagram

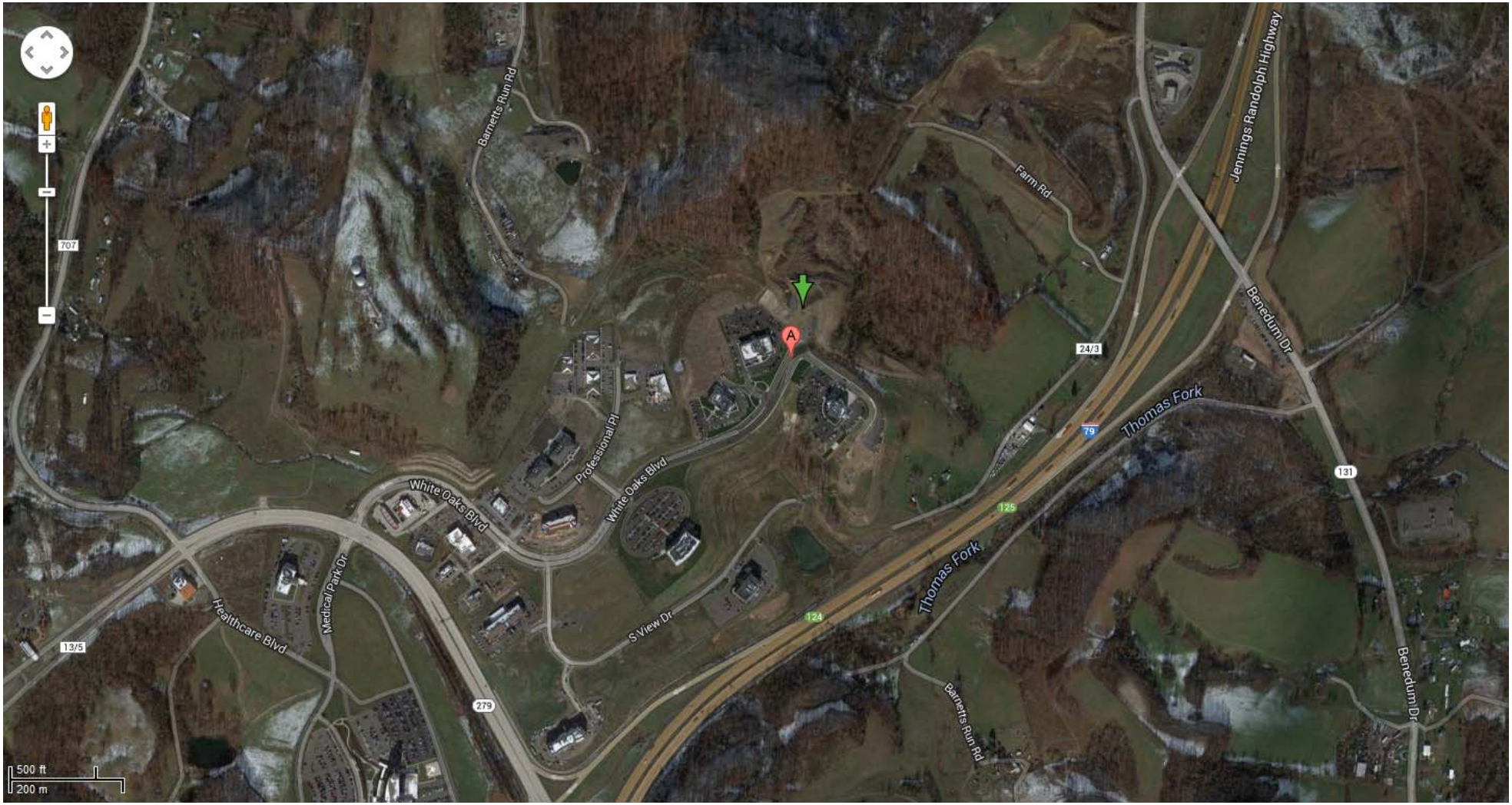
Process Flow Diagram for the Emergency Auxiliary Generator

Bridgeport General Office Building



Attachment F

Area Map


Barnetts Run Rd
Farm Rd
Jennings Randolph Highway
Benedum Dr
A
24/3
Thomas Fork
79
131
Professional Pl
White Oaks Blvd
White Oaks Blvd
125
Thomas Fork
Medical Park Dr
Healthcare Blvd
S View Dr
124
13/5
279
Barnetts Run Rd
Benedum Dr
707
500 ft
200 m

Attachment G

Equipment Data Sheets and Registration Section Applicability Form

G65-C REGISTRATION APPLICATION FORMS

General Permit G65-C Registration
Section Applicability Form

General Permit G65-C was developed to allow qualified registrants to seek registration for emergency generator(s).

General Permit G65-C allows the registrant to choose which sections of the permit that they wish to seek registration under. Therefore, please mark which sections that you are applying for registration under. Please keep in mind, that if this registration is approved, the issued registration will state which sections will apply to your affected facility.

Section 5	Reciprocating Internal Combustion Engines (R.I.C.E.)*	☒
Section 6	Tanks	☐
Section 7	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40CFR60 Subpart IIII)	☐
Section 8	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (40CFR60 Subpart JJJJ)	☒

*** Affected facilities that are subject to Section 5 may also be subject to Sections 7 or 8. Therefore, if the applicant is seeking registration under both sections, please select both.**

EMERGENCY GENERATOR ENGINE DATA SHEET

Source Identification Number[1]		EG-1	
Engine Manufacturer and Model		Cummins GTA50	
Manufacturer's Rated bhp/rpm		1,098 hp (750 kW)	
Source Status[2]		NS	
Date Installed/Modified/Removed[3]		2015	
Engine Manufactured/Reconstruction Date[4]		8/2014	
Is this a Certified Stationary Compression Ignition Engine according to 40CFR60 Subpart IIII? (Yes or No)[5]		No	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No)[5]		No	
Engine, Fuel and Combustion Data	Engine Type[7]	RB4S	
	APCD Type[8]	RB with SCR	
	Fuel Type[9]	PQ	
	H_2S (gr/100 scf)	20 (tariff)	
	Operating bhp/rpm	1098/1800 = 0.61	
	BSFC (Btu/bhp-hr)	9900 (worst case)	
	Fuel throughput (ft^3/hr)	10,870	
	Fuel throughput (ft^3/yr)	5,435,100	
	Operation (hrs/yr)	500	
Reference[10]	Potential Emissions[11]	lbs/hr	tons/yr
MD	NO_X	4.84	1.21
MD	CO	2.66	0.67
MD	VOC	1.21	0.30
AP	SO_2	6.39E-03	1.60E-03
AP	PM_{10}	0.10	0.03
AP	Formaldehyde	0.22	0.056

1. Enter the appropriate Source Identification Number for each emergency generator. Generator engines should be designated EG-1.

2. Enter the Source Status using the following codes:

   NS Construction of New Source (installation) ES Existing Source

MS Modification of Existing Source RS Removal of Source

3. Enter the date (or anticipated date) of the engine's installation (construction of source), modification or removal.

4. Enter the date that the engine was manufactured, modified or reconstructed.

5. Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart IIII. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4210 as appropriate.

   Provide a manufacturer's data sheet for all engines being registered.

6. Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart JJJJ. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4243a(2)(i) through (iii), as appropriate.

   Provide a manufacturer's data sheet for all engines being registered.

7. Enter the Engine Type designation(s) using the following codes:

LB2S	Lean Burn Two Stroke	RB4S	Rich Burn Four Stroke
LB4S	Lean Burn Four Stroke		

8. Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:

A/F	Air/Fuel Ratio	IR	Ignition Retard
HEIS	High Energy Ignition System	SIPC	Screw-in Precombustion Chambers
PSC	Prestratified Charge	LEC	Low Emission Combustion
NSCR	Rich Burn & Non-Selective Catalytic Reduction	SCR	Lean Burn & Selective Catalytic Reduction

9. Enter the Fuel Type using the following codes:

PQ	Pipeline Quality Natural Gas	RG	Raw Natural Gas
2FO	#2 Fuel Oil	LPG	Liquid Propane Gas

10. Enter the Potential Emissions Data Reference designation using the following codes. Attach all referenced data to this *Compressor/Generator Data Sheet(s)*.

MD	Manufacturer's Data	AP	AP-42	
GR	GRI-HAPCalc™	OT	Other _____	(please list)

11. Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.

STORAGE TANK DATA SHEET

Source ID #[1]	Status[2]	Content[3]	Volume[4]	Dia[5]	Throughput[6]	Orientation[7]	Liquid Height[8]
N/A							

1. Enter the appropriate Source Identification Numbers (Source ID #) for each storage tank located at the compressor station. Tanks should be designated T01, T02, T03, etc.
2. Enter storage tank Status using the following:

   EXIST Existing Equipment NEW Installation of New Equipment
   REM Equipment Removed
3. Enter storage tank content such as condensate, pipeline liquids, glycol (DEG or TEG), lube oil, etc.
4. Enter storage tank volume in gallons.
5. Enter storage tank diameter in feet.
6. Enter storage tank throughput in gallons per year.
7. Enter storage tank orientation using the following:

   VERT Vertical Tank HORZ Horizontal Tank
8. Enter storage tank average liquid height in feet.

EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR CRITERIA POLLUTANTS

Emergency Generator Location: Bridgeport General Office Building | **Registration Number (Agency Use) G65-C**

	Potential Emissions (lbs/hr)					Potential Emissions (tons/yr)				
Source ID No.	**NO_X**	**CO**	**VOC**	**SO_2**	**PM_{10}**	**NO_X**	**CO**	**VOC**	**SO_2**	**PM_{10}**
EG-1	**4.84**	**2.66**	**1.21**	**6.39E-03**	**0.10**	**1.21**	**0.67**	**0.30**	**1.60E-04**	**0.03**
Total	**4.84**	**2.66**	**1.21**	**6.39E-03**	**0.10**	**1.21**	**0.67**	**0.30**	**1.60E-04**	**0.03**

EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR HAZARDOUS/TOXIC POLLUTANTS

Emergency Generator Location: Bridgeport General Office Building | **Registration Number (Agency Use) G65-C**

	Potential Emissions (lbs/hr)						Potential Emissions (tons/yr)					
Source ID No.	Benzene	Ethyl-benzene	Toluene	Xylenes	n-Hexane	Formalde-hyde	Benzene	Ethyl-benzene	Toluene	Xylenes	n-Hexane	Formalde-hyde
EG-1	1.72E-02	2.70E-04	6.07E-03	2.12E-03	N/A	0.22	4.29E-03	6.74E-05	1.52E-03	5.30E-04	N/A	0.056
Total	1.72E-02	2.70E-04	6.07E-03	2.12E-03	N/A	0.22	4.29E-03	6.74E-05	1.52E-03	5.30E-04	N/A	0.056

General Permit Levels
Construction, Modification, Relocation, Administrative Update

Class II General Permits – G10-C (Coal Preparation and Handling), G20-B (Hot Mix Asphalt), G30-D (Natural Gas Compressor Stations), G35-A (Natural Gas Compressor Stations with Flares/Glycol Dehydration Units), G40-B (Nonmetallic Minerals Processing), G50-B (Concrete Batch Plant), G60-C (Emergency Generators)

Class I General Permit - G65-C (Emergency Generators)

General Permit	Public Notice	Review Period as per 45CSR13	Application Fee	Criteria	Application Type
Class II General Permit (Construction)	30 days (applicant)	90 days	$500 + applicable NSPS fees	6 lb/hr and 10 tpy of any regulated air pollutant OR 144 lb/day of any regulated air pollutant, OR 2 lb/hr of any hazardous air pollutant OR 5 tpy of aggregated HAP OR 45CSR27 TAP (10% increase if above BAT triggers or increase to BAT triggers) or subject to applicable standard or rule, but subject to specific eligibility requirements	Registration Application
Class II General Permit (Modification)	30 days (applicant)	90 days	$500 + applicable NSPS fees	Same as Class II General Permit (Construction) but subject to specific eligibility requirements	Registration Application
Administrative Update (Class I)	None	60 days	None	Decrease in emissions or permanent removal of equipment OR more stringent requirements or change in MRR that is equivalent or superior	Registration Application or Written Request
Administrative Update (Class II)	30 days (applicant)	60 days	$300 + applicable NSPS fees	No change in emissions or an increase less than Class II Modification levels	Registration Application
Relocation	30 days (applicant)	45 days	$500 + applicable NSPS fees	No emissions increase or change in facility design or equipment	Registration Application
Class I General Permit	None	45 days	$250	Same as Class II General Permit (Construction) but subject to specific eligibility requirements	Registration Application

Gaseous Fuel Generator Set
GTA50 Engine Series

Specification Sheet
Model GFLC EPA SI NSPS Compliant Capable

NPower

KW(KVA) @ 0.8 P.F	
Compression	60 Hz-1800 RPM
Ratio	Standby
8.5:1 (Note 1)	750 kW (937 kVa)

Note:

(1) 54℃ (130° F) or lower water temperature into the aftercooler.
NOTE: This engine is EPA SI NSPS compliant capable. A site validation emission test must be performed.

Fuel Application Guide	
Compression Ratio	8.5:1
Dry Processed Natural Gas	Yes
Propane (HD-5)	N/A
All gases such as field gas, digester and sewage gas will require an analysis of the specified gas and pre-approval from CNGE. Consult you Cummins Distributor for details.	

Description

The Cummins NPower GF-series commercial generator set is a fully integrated power generation system providing optimum performance, reliability, and versatility for stationary standby power applications.

A primary feature of the GF GenSet is strong motor-starting capability and fast recovery from transient load changes. The torque-matched system includes a heavy-duty Cummins 4-cycle spark ignited engine, an AC alternator with high motor-starting kVA capacity, and an electronic voltage regulator with three phase sensing for precise regulation under steady-state or transient loads. The GF GenSet accepts 100% of the nameplate standby rating in one step. *

The standard PowerCommand® digital electronic control is an integrated system that combines engine and alternator controls for high reliability and optimum GenSet performance.

Optional protective housing and component heaters shield the generator set from extreme operating conditions.** Environmental concerns are addressed by low exhaust emission engines, sound-attenuated housings, and exhaust silencers. A wide range of options, accessories, and services are available, allowing configuration to your specific power generation needs.

Every production unit is factory tested at rated load and power factor. This testing includes demonstration of rated power and single-step rated load pickup. Cummins NPower manufacturing facilities include quality standards, emphasizing our commitment to high quality in the design, manufacture, and support of our products. The PowerCommand control is UL508 Listed.

All Cummins NPower generator sets are backed by a comprehensive warranty program and supported by a worldwide network of 233 locations to assist with warranty, service, parts, and planned maintenance

Features

Cummins Heavy-Duty Engine - Rugged 4-cycle industrial spark ignited engine delivers reliable power, low emissions, and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor-starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads, fault-clearing short-circuit capability, and class H insulation. The alternator electrical insulation system is UL1446 Recognized.

Control Systems - The PowerCommand electronic control is standard equipment and provides total genset system integration, including automatic remote starting/stopping, precise voltage regulation, alarm and status message display, output metering, and auto-shutdown at fault detection,and NFPA 110 compliance. PowerCommand control is Listed to UL508.

Cooling System - Standard cooling package provides reliable running at the rated power level, at up to 104ºF ambient temperature.

Housings - Optional weather-protective housing and sound attenuation housing(s) are available.

Standards - Generators are designed, manufactured and tested to relevant UL, NFPA, ISO and IEC standards. The alternator is certified to CSA 22.2. The controls are CSA C282-M1999 and 22.2 No.14 M91. PowerCommand control is UL508 Listed.

Warranty and Service - Backed by a comprehensive warranty and worldwide distributor service network.

* Adequate fuel pressure and volume must be provided.
** Cold weather heaters are recommended when ambient temperatures are below 32℉.

Generator Set

The general specifications provide representative configuration details. Consult the outline drawing for installation design.

Specifications - General	
Unit Width	2515 mm (90 in) Open set
Unit Height	2744 mm (108 in) Open set
Unit Length	5182 mm (204 in) Open set
Unit Dry Weight	10241 to 11181 kg (22578 to 24650 lbs) - Dependant on selected alternator.
Rated Speed	1800 rpm
Voltage Regulation, No Load to Full Load	±1.0%
Random Voltage Variation	±1.0%
Frequency Regulation	Isochronous
Random Frequency Variation	±0.5%
Radio Frequency Interference	Optional PMG excitation operates in compliance with BS800 and VDE level G and N. Addition of RFI protection kit allows operation per MIL-STD-461 and VDE level K.
See outline drawing for installation design specifications.	

Rating Definitions

Standby Rating based on: Applicable for supplying emergency power for the duration of normal power interruption. No sustained overload capability is available for this rating. (Equivalent to Fuel Stop Power in accordance with ISO3046, AS2789, DIN6271 and BS5514). Nominally rated.

Site Derating Factors

Engine power available up to 914 m (3000 ft) at ambient temperatures up to 40°C (104°F). Above 914 m (3000 ft) derate at 4% per 305 m (1000 ft), and 1% per 5.5°C (10°F) above 40°C (104°F).

Gensets with Weather or Sound Enclosures may reduce ambient capability by 2 to 4.5°C (4 to 8°F) depending on enclosure type and site conditions.

1) Data represents gross engine performance capabilities obtained and corrected in accordance with SAEJ1349 conditions of 29.61 in. Hg.(100KPa) barometric pressure [361 ft. (110m) altitude], 77ºF (25ºC) inlet air temperature, and 0.30 in Hg.(100KPa) water vapor pressure using dry processed natural gas fuel with 905 BTU per standard cubic foot (33.72 kJ/L) lower heating value. Deration may be required due to altitude, temperature or type of fuel. Consult your local Cummins Distributor for details.

2) FUEL SYSTEM

Standard Carburetor – IMPCO Make
Low Pressure Dry Processed Natural Gas – (905 BTU/ft.² L.H.V.)
Running Pressure to Engine .....381 to 508 mm H_20(15 to 20 in. H_20) to engine regulator
Minimum Gas Supply Pipe Size @ Engine .....50.8 mm (2.0 in.)
Gas Supply Filter Pressure Rating .....690 kPa (100psi)

The preceding pipe sizes are only suggestions and piping may vary with temperatures, distance from fuel supply and application of local codes. Gas must be available at adequate volume and pressure for engine at the regulator.

The Genset (engine) performance is based on processed natural gas fuel with 905 BTU per standard cubic foot (33.72 kJ/L) lower heating value. Variations in fuel composition and/or supply pressure must be eliminated during steady state operation. Locate the gas regulator as near to the engine as possible. Some systems may need an accumulator or other device(s) for startup or unstable conditions, contact the Fuel Supply utility for details.

Engine

Cummins heavy-duty spark ignited engines use advanced combustion technology for reliable and stable power, low emissions, and fast response to sudden load changes.

Electronic governing is standard for applications requiring constant (isochronous) frequency regulation such as Uninterruptible Power Supply (UPS) systems, non-linear loads, or sensitive electronic loads. Optional coolant heaters are recommended for all emergency standby installations or for any application requiring fast load acceptance after start-up.

Specifications - Engine

Base Engine	Cummins Model GTA50 CC
Displacement	50.3 L (3067 in^3)
Overspeed Limit	2100 rpm
Regenerative Power	24 kW
Cylinder Block Configuration	Cast iron with replaceable wet cylinder liners
Cranking Current	850 amps at ambient temperature of 0°C (32°F)
Battery Charging Alternator	35 amps
Battery Type	8D
Starting Voltage	24-volt, negative ground
Standard Cooling System	40°C (104°F) ambient radiator
Lube Oil Filter Types	Five spin-on canisters-combination full flow with bypass

Fuel		**STANDBY**		
Fuel Consumption	Load	1/2	3/4	Full
(Approximate)	kW	375	563	750
Natural Gas	CFH	6222	8162	10366
Propane Vapor	CFH	N/A	N/A	N/A
Propane Liquid	GPH	N/A	N/A	N/A

Cooling	**Full Load**
Jacket Water Heat Rejection to Coolant	831 kW (47320 BTU/min)
Aftercooler Heat Rejection to Coolant	84 kW (4770 BTU/min)
Heat Rejection to Room	173 kW (9830 BTU/min)
Jacket Water Coolant Capacity (w/radiator)	326 L (86 USG)
Jacket Water Coolant Flow Rate	1813 L/min (479 GPM)
Aftercooler Coolant Capacity (w/radiator)	182 L (48 USG)
Aftercooler Coolant Flow Rate	420 L/min (111 GPM)
Maximum Coolant Friction Head *	34 kPa (5 psi)
Maximum Coolant Static Head *	18.3 m (60 ft)
Radiator Fan Load	54 kW (72 hp)

Air	**Full Load**
Combustion Air	774 L/sec (1640 cfm)
Maximum Air Cleaner Restriction	381 mm H_2O (15 in H_2O)
Alternator Cooling Air (309F)	1.96 m^3/s (4156 cfm)
Radiator Cooling Air	27845 L/sec (59000 cfm)
Maximum Restriction at Radiator Discharge (static)	12.7 mm H_2O (0.5 in H_2O)

Exhaust	**Full Load**
Gas Flow (Full Load)	2890 L/sec (6124 cfm)
Gas Temperature	662° C (1224° F)
Maximum Back Pressure	51 mm Hg (2 in Hg)

Engine	**Full Load**
Gross Engine Power Output	819 kWm (1098 hp)
BMEP	1089 kPa (158 psi)
Piston Speed	9.5 m/s (1875 ft/min)
Oil Capacity (High/Low)	224 L (59.2 gal) / 194 L (51.2 gal)

* Jacket water only.

Engine Performance Data Cummins Inc Columbus, Indiana 47202-3005 http://www.cummins.com	Power Generation GTA50 FR	1098 BHP (818 kw) @ 1800 RPM 3204 lb - ft (4344 N-M) @ 1800 RPM	Revision 23Jan09

Compression Ratio:	8.5:1	Displacement:	3067 in3 (50.3 L), One Turbo
Fuel Sytem:	Natural Gas	Aspiration:	Turbocharged and Aftercooled
Emission Certification:	EPA NSPS Compliant Capable	Bore:	6.25 in (159)
Number Cylinders:	16 Cylinders	Stroke:	6.25 in (159)
Combustion:	Stochiometric		

Engine Performance Data @ 1800 rpm

OUTPUT POWER			FUEL CONSUMPTION
%	kWm	hp	BTU/ hp·h
STANDBY POWER			
100	818	1098	8260
75	614	824	8670
50	409	549	9900

	STANDBY POWER		
	100% Load	*75% Load*	*50% Load*
Governed Engine Speed ..... rpm	1800	1800	1800
Engine Idle Speed ..... rpm	1200	1200	1200
Gross Engine Power Output ..... hp (kW)	1098	824	549
Brake Mean Effective Pressure ..... psi (kPa)	158	119	79
Piston Speed ..... ft/s (m/s)	31	31	31
Friction Horsepower ..... hp (kW)			
Engine Data			
Engine Jacket Water Flow at Stated Friction Head External to Engine:			
• 2.5 psi Friction Head ..... US gpm (litre/min)	479	479	479
• Maximum Friction Head ..... US gpm (litre/min)	467	467	467
Intake Air Flow ..... ft3/min (litre/s)	1640	1288	972
Intake Manifold Pressure ..... in Hg (kPa)	11	6	2
Exhaust Gas Temp - Dry Stack ..... °F (°C)	1224	1212	1181
Exhaust Gas Flow ..... ft3/min (litre/s)	6123	4941	3745
Air to Fuel Ratio ..... air : fuel	16.8	16.7	16.7
Heat Rejection to Ambient ..... BTU/min (kW)	9830	6270	7170
Heat Rejection to Jacket Coolant ..... BTU/min (kW)	47320	42500	34860
Heat Rejection to Exhaust ..... BTU/min (kW)	42590	33110	24300
Aftercooler Data			
Aftercooler Water Flow at Stated Friction Head External to Engine:			
• 2.5 psi Friction Head ..... US gpm (litre/min)	111	111	111
• Maximum Friction Head ..... US gpm (litre/min)	106	106	106
Heat Rejected to Aftercooler ..... BTU/min (kW)	4770	2400	900
Charge Air Flow ..... lb/min (kg/min)	123	94	73
Turbocharger Compressor Outlet Pressure ..... psi (kPa)	17	13	8
Turbocharger Compressor Outlet Temperature ..... °F (°C)	301	246	192
Ignition Timing (BTDC) ..... deg.	15	15	15
Total Hydrocarbons ..... gm/hp-hr	0.4	0.5	0.5
NonMethane Hydrocarbons ..... gm/hp-hr	0.1	0.1	0.1
NOx ..... gm/hp-hr	8.6	9.0	7.8
CO ..... gm/hp-hr	0.6	0.8	1.1
CO2 ..... gm/hp-hr	345	402	429
O2 ..... %	0.4	0.4	0.4

Equipment Specification Report

Engine Data

Number of Engines:	1
Application:	Power Generation
Engine Manufacturer:	Cummins
Model Number:	GTA50
Power Output:	1,098 bhp
Lubrication Oil:	0.6 wt% sulfated ash or less
Type of Fuel:	Natural Gas
Exhaust Flow Rate:	6,123
Exhaust Temperature:	1,225 F

Catalytic Converter System Data

Catalyst Model Number:	SP14812 NX-14-08F-EN1
Catalyst Dimensions:	12.933" Dia. x 2.933" THK
Quantity of Elements Per Engine:	2
Exhaust Temperature Limits:	750 - 1250°F (catalyst inlet); 1350°F (Catalyst Outlet)

Emission Requirements

Exhaust Gases	Engine Outputs (g/bhp-hr)	Reduction (%)	Warranted Converter Outputs (g/bhp-hr)	Requested Emissions Targets
CO	0.60	0	4.00	4 g/bhp-hr
NMHC*	0.40	0	1.00	1 g/bhp-hr
NOx***	8.6	77	2.00	2 g/bhp-hr
O2	0.4%			

† MIRATECH warrants the performance of the converter, as stated above, per the MIRATECH General Terms and Conditions of Sale.

*MW referenced as CH_4 **MW referened as CH_4 ***MW referenced as NO_2

Attachment I

Emissions Calculations

Emergency Engine Potential Emissions
Dominion Transmission, Inc.
General Office Building -Bridgeport

Input Data:	Cummins GTA50		
Design Class:	4-stroke rich burn		
Engine Power:	1,098	hp	(Manufacturer Specs)
Rated Elctrical Output:	750	kW	(Manufacturer Specs)
Fuel Consumption:	9,900	Btu/hp-hr	(Manufacturer Specs - Worst Case)
Fuel Input:	10.87	MMBtu/hr	
Maximum Hours of Operation:	8,760	hrs/yr	
	500	hrs/yr	
Fuel Throughput:	10,870	cf/hr	
	5,435,100	cf/yr	
Heating Value of Natural Gas:	1,000	Btu/cf	

Emission Calculations

Pollutant	Emission Factor		Emissions (8760 hrs/yr)			Emissions (500 hrs/yr)		
			(lb/hr)	(lbs/day)	(tons/yr)	(lb/hr)	(lbs/day)	(tons/yr)
Criteria Pollutants								
PM (filterable)	9.50E-03	lb/MMBtu	0.10	2.48	0.45	0.10	2.48	0.03
PM-10 (filterable)	9.50E-03	lb/MMBtu	0.10	2.48	0.45	0.10	2.48	0.03
PM-2.5 (filterable)	9.50E-03	lb/MMBtu	0.10	2.48	0.45	0.10	2.48	0.03
PM (condensibles)	9.91E-03	lb/MMBtu	0.11	2.59	0.47	0.11	2.59	0.03
SO2	5.88E-04	lb/MMBtu	6.39E-03	0.15	2.80E-02	6.39E-03	0.15	1.60E-03
CO	1.10	g/hp-hr	2.66	63.91	11.66	2.66	63.91	0.67
NO_x	2.00	g/hp-hr	4.84	116.19	21.21	4.84	116.19	1.21
VOC	0.50	g/hp-hr	1.21	29.05	5.30	1.21	29.05	0.30
Greenhouse Gases								
CO_2	117.0	lb/MMBtu	1271.57	--	5569.47	1271.57	--	317.89
CH_4	2.20E-03	lb/MMBtu	0.02	--	0.10	0.02	--	0.01
N_2O	2.20E-04	lb/MMBtu	0.00	--	0.01	0.00	--	0.00
CO_2e	117.1	lb/MMBtu	1272.88	--	5575.22	1272.88	--	318.22
Hazardous Air Pollutants								
1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	2.75E-04	--	1.20E-03	2.75E-04	--	6.88E-05
1,1,2-Trichloroethane	1.53E-05	lb/MMBtu	1.66E-04	--	7.28E-04	1.66E-04	--	4.16E-05
1,1-Dichloroethane	1.13E-05	lb/MMBtu	1.23E-04	--	5.38E-04	1.23E-04	--	3.07E-05
1,2-Dichloroethane	1.13E-05	lb/MMBtu	1.23E-04	--	5.38E-04	1.23E-04	--	3.07E-05
1,2-Dichloropropane	1.30E-05	lb/MMBtu	1.41E-04	--	6.19E-04	1.41E-04	--	3.53E-05
1,3-Butadiene	6.63E-04	lb/MMBtu	7.21E-03	--	3.16E-02	7.21E-03	--	1.80E-03
1,3-Dichloropropene	1.27E-05	lb/MMBtu	1.38E-04	--	6.05E-04	1.38E-04	--	3.45E-05
Acrolein	2.63E-03	lb/MMBtu	2.86E-02	--	1.25E-01	2.86E-02	--	7.15E-03
Acetaldehyde	2.79E-03	lb/MMBtu	3.03E-02	--	1.33E-01	3.03E-02	--	7.58E-03
Benzene	1.58E-03	lb/MMBtu	1.72E-02	--	7.52E-02	1.72E-02	--	4.29E-03
Butr/isobutyraldehyde	4.86E-05	lb/MMBtu	5.28E-04	--	2.31E-03	5.28E-04	--	1.32E-04
Carbon Tetrachloride	1.77E-05	lb/MMBtu	1.92E-04	--	8.43E-04	1.92E-04	--	4.81E-05
Chlorobenzene	1.29E-05	lb/MMBtu	1.40E-04	--	6.14E-04	1.40E-04	--	3.51E-05
Chloroform	1.37E-05	lb/MMBtu	1.49E-04	--	6.52E-04	1.49E-04	--	3.72E-05
Ethane	7.04E-02	lb/MMBtu	7.65E-01	--	3.35E+00	7.65E-01	--	1.91E-01
Ethylbenzene	2.48E-05	lb/MMBtu	2.70E-04	--	1.18E-03	2.70E-04	--	6.74E-05
Ethylene Dibromide	2.13E-05	lb/MMBtu	2.32E-04	--	1.01E-03	2.32E-04	--	5.79E-05
Formaldehyde	2.05E-02	lb/MMBtu	2.23E-01	--	9.76E-01	2.23E-01	--	5.57E-02
Methanol	3.06E-03	lb/MMBtu	3.33E-02	--	1.46E-01	3.33E-02	--	8.32E-03
Methylene Chloride	4.12E-05	lb/MMBtu	4.48E-04	--	1.96E-03	4.48E-04	--	1.12E-04
Naphthalene (POM)	9.71E-05	lb/MMBtu	1.06E-03	--	4.62E-03	1.06E-03	--	2.64E-04
PAH	1.41E-04	lb/MMBtu	1.53E-03	--	6.71E-03	1.53E-03	--	3.83E-04
Styrene	1.19E-05	lb/MMBtu	1.29E-04	--	5.67E-04	1.29E-04	--	3.23E-05
Toluene	5.58E-04	lb/MMBtu	6.07E-03	--	2.66E-02	6.07E-03	--	1.52E-03
Vinyl Chloride	7.18E-06	lb/MMBtu	7.80E-05	--	3.42E-04	7.80E-05	--	1.95E-05
Xylene	1.95E-04	lb/MMBtu	2.12E-03	--	9.28E-03	2.12E-03	--	5.30E-04
TOTAL HAP:			**1.12**		**4.90**	**1.12**		**0.28**

(1) Lb/MMBtu emission factors from AP-42, Section 3.2, Natural Gas-Fired Reciprocating Engines, Table 3.2-3, 7/00
(2) G/hp-hr emission factors from manufacturer specification sheet. CO and VOC based on "worst case" and NOx based on NSPS guarantee.
(3) Lb/MMBtu numbers based on 40 CFR Part 98 Tables C-1 and C-2 for natural gas
For example: CO_2 = (53.06 kg CO_2/MMBtu) / (0.453592 kg/lb) = 117.0 lb/MMBtu
(4) Global Warming Potentials = 25 for CH_4 and 298 for N_2O (per 40 CFR Part 98 Table A-1 to Subpart A)
For example: CO_2e = (117.0 lb/MMBtu) + (0.0022 lb/MMBtu * 25) + (0.00022 lb/MMBtu * 298) = 117.1 lb/MMBtu

Attachment L

General Permit Registration Application Fee